

ALPINA IRON FURNACE
At the head of Bonaparte Creek
Harrisville Vicinity
Lewis County
New York

HAER No. NY-188

HAER
NY
25-HARV,
1-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
Northeast Region
Philadelphia Support Office
200 Chestnut Street
Philadelphia, Pennsylvania 19106

HISTORIC AMERICAN ENGINEERING RECORD

ALPINA IRON FURNACE

HAER No. NY-188

HAER
NY
25-HARV
1-

LOCATION: At the head of Bonaparte Creek, Harrisville Vicinity, Lewis County, New York

UTM: A 18.465970.4890778

B 18.466153.4890613

C 18.466192.4890564

D 18.466116.4890469

E 18.465922.4890462

F 18.465837.4890671

G 18.465824.4890613

H 18.465827.4890584

I 18.465798.4890582

J 18.465795.4890612

K 18.465876.4890494

L 18.465897.4890472

M 18.465844.4890413

N 18.465822.4890434

Quad: Lake Bonaparte, New York

DATE OF CONSTRUCTION: Furnace, 1848; Sawmill, by 1855

PRESENT OWNER: United States Army, 10th Mountain Division, Fort Drum, New York

PRESENT USE: Abandoned prior to 1922

SIGNIFICANCE: The Alpina site was one of four locations incorporated into the Fort Drum Military Reservation in which iron was produced during the 19th century. The furnace was constructed by 1848 under the auspices of Swiss investors, but achieved local notoriety as one of a number of speculative ventures undertaken by Zebulon H. Benton and his wife, Caroline, during the middle decades of the 19th century. Benton was probably responsible for construction of the sawmill, which (under subsequent owners) was in operation at least into the 1890s. The Alpina site thus contains two examples of rural industries in 19th century Lewis County that were organized to exploit the area's natural resources: water power, timber, and iron ore.

PROJECT INFORMATION:

The Alpina Iron Furnace site was recorded by the Cultural Resource Group of Louis Berger & Associates, Inc., in May 1988, for the National Park Service, Mid-Atlantic Region, Philadelphia; and the 10th Mountain Division, Fort Drum, New York. The project team consisted of Martha H. Bowers, Architectural Historian; Rob Tucher, Photographer; Alain Outlaw and Henry Holt, Archaeologists; Ingrid Wuebber, Historian; Catherine Shaddock, Research Assistant; and John R. Bowie, A.I.A., Consulting Architect.

DESCRIPTION

Alpina is a former rural industrial site located at the mouth of Mud Lake, which constitutes the lower portion of Lake Bonaparte in Diana, Lewis County, New York. This area of Diana is contained within the U.S. Army's Fort Drum Military Reservation, created in 1942 and encompassing over 100,000 acres in Lewis and Jefferson Counties. Below Mud Lake and the Alpina site, Bonaparte Creek flows 4.75 miles northeast, then southeast, to the Indian River.

The Alpina site occupies approximately 17 acres of wooded land, crisscrossed by abandoned roads and secondary channels of Bonaparte Creek. Evidence of the site's past built environment consists chiefly of foundation remains and the collapsed stack of an iron furnace.

Flow out of Mud Lake is controlled by a low concrete regulating dam built in 1933. This dam was constructed behind (south of) an earlier rubble stone dam, the crest of which carried a roadway. The spillway of the 1933 dam is located toward the west end of the structure; that portion of the earlier dam directly below this spillway has been breached in order to permit free flow of water from Mud Lake into Bonaparte Creek.

The spillway of the earlier dam is located 30 feet east of the breach. Directly below the spillway, dry-laid rubble stone foundation fragments delineate an area measuring approximately 30 feet east-west and 60 feet north-south. Within the south half of that area are two roughly parallel rows of three rubble stone pedestals or footings. The rows are approximately 12 feet apart on center, and within each row the pedestals are spaced at roughly 12-foot intervals. In the north portion of the area, on axis with the pedestal rows, are fragments of four large rubble stone walls, the placement of which creates three channels opening onto Bonaparte Creek.

The furnace stack is situated due east of the easternmost of the three channels. Rubble stone foundation fragments between the furnace and the outer wall of the channel suggest the former presence of a physical link between these two features. The furnace stack has collapsed to the northwest, leaving only the lower portions of the south and east walls and of the southwest and northeast corners, relatively intact. The exterior walls are laid up of coursed rubble sandstone and battered for stability. The inner walls of the furnace are lined with firebrick bearing the inscription "Hall & Sons No. 1, Perth Amboy, N.J." The area between the inner and outer walls is filled with rubble stone.

The stack measures 29 feet x 29 feet at the base (existing grade), and now rises to a truncated height of approximately 25 feet at the southeast corner. The south wall of the stack contains no openings. Roughly centered in the east wall, however, is a triangular arch formed by cut stone voussoirs. A rectangular area 8 feet x 25 feet at the base of this wall is depressed some 5 feet below grade and delineated with a stone wall. The apex of the arch is 11 feet above this ground surface. Twelve feet above the top of the arch is a horizontal line of rectangular cavities, evenly spaced approximately 2 feet apart, of a size and shape appropriate to have supported the ends of wood beams or joists. Iron tie rods inserted through the walls project in regular vertical rows three feet from each corner. The ends of the rods have small holes or eyes into which pins would have been inserted to hold them in place against the expansion and contraction of the furnace walls during blast.

The arrangement of stone foundations and footings directly below the spillway is interpreted as the remains of a sawmill, the water-generated power for which was originally developed to power the blast for the adjacent furnace. In this interpretation, gates mounted on the spillway of the stone dam would have controlled the flow of water through a wooden sluice (carried on the stone pedestals) to the stone-lined channels which functioned as pits for waterwheels, and through the pits to be discharged into Bonaparte Creek. The easternmost pit would have contained a wheel which could be used to power blast machinery located on a structure directly east of the wheel and on axis with the furnace.

The presence of a low ridge behind the south wall of the stack suggests that the furnace was charged from that side, although no structural evidence of a charging bridge remains. The casting house of the furnace (where molten iron was tapped and formed into pigs and castings) would have been located on the north side of the furnace, with tuyeres providing the blast installed in arches on the east and west sides. The horizontal line of cavities above the arch on the east side, coupled with the rubble stone perimeter defining the depression at the base of this wall, suggests that the tuyere arch on this side, at least, was sheltered by a wooden roof or partial enclosure.

HISTORICAL BACKGROUND

(Note: This historical background has been largely excerpted from two technical reports prepared for the National Park Service and the United States Army in support of cultural resource

investigations on the Fort Drum Military Reservation (see Friedlander et al. 1986:2-1 - 2-21; Friedlander et al. 1988:19-24).

The earliest settlement in the vicinity of Fort Drum is associated with Long Falls (now Carthage), which was surveyed and settled between 1793 and 1798 (Powell 1976:119). Until the 1790s, this area was generally known as the "North County," and tensions between the United States and Great Britain, chaotic land policies, and unstable currencies all worked to inhibit permanent occupation of the area (Powell 1976:16). New York State's land policies, established in 1786, regulated survey and sale of public lands and excepted purchasers from taxation for seven years after acquisition as long as the land was settled within that period. This resulted in a period of land speculation along the frontier (Powell 1976:17).

In 1791, Alexander Macomb, who had already made one fortune in the fur trade as John Jacob Astor's partner, bought 1,920,000 acres, comprising most of Franklin, St. Lawrence, and Jefferson Counties, and all of Lewis County (Powell 1976:113). Macomb soon went bankrupt and one of his partners, William Constable, had to sell off their holdings. Constable peddled some of the tracts to friends in New York and then went to France in 1792 to try to sell property to wealthy Frenchmen, eager to leave France following the fall of the Bastille in 1789. Among these was James LeRay, whose father had been active in 18th-century transatlantic commerce and had supported the American Revolution, and who had already become an American citizen in 1788. LeRay introduced Constable to his brother-in-law, Paul Chassanis. With LeRay, Chassanis formed the Castorland Company, and in August 1792, he and Constable executed a deed for 630,000 acres in what eventually became Lewis and Jefferson Counties (Powell 1976:117-119).

Unfortunately, the deal went sour. In March of the following year, Constable sold Chassanis 210,000 acres in the area approximately bounded by Rome, Watertown, the Black River, and Lake Ontario. One city, Basle, was projected in the Black River valley near Lake Ontario; the sale eventually led to the founding of Long Falls between 1793 and 1798 and settlement of 20 French aristocratic families in Castorland between 1796 and 1800. In 1798, however, the New York Legislature rescinded permission for French citizens to hold property in New York. LeRay acquired all of Castorland; the settlers went home to France, where they were welcomed back by their government in 1800, and by 1804, the area was nearly deserted. They left behind 82 acres of cleared land, 18 log cabins, 1 sawmill, and several unusable roads (Powell 1976:1804).

James LeRay returned to France in 1790 to settle his father's affairs, and he came back to the United States in 1802 (Fort Drum Public Affairs Office 1981:n.p.; Powell 1976:141). Two years earlier, he had purchased 220,000 acres (previously part of the Chassanis holdings) from the Antwerp Company (Fort Drum Public Affairs Office 1981:n.p.). In 1802, LeRay took over the rest of the Chassanis tract and then sold some of his immense holdings to a group of Pennsylvania Quakers, who founded the town of Philadelphia (Powell 1976:141).

Although the French abandoned their settlement at Long Falls by 1804, pioneers from Connecticut, Vermont, and Massachusetts began to trickle into Jefferson County between 1779 and 1800, settling primarily south of the Black River. Noadiah Hubbard made the first permanent settlement in Champion in 1798, and Lyman Ellis founded Ellisburg the same year. Two years later, Henry Coffeen, Hart Massey and others settled Watertown, and in 1802 a dam was built across the Black River at the foot of Mill Street in that village. Pioneers were primarily Congregationalists, although some Quakers migrated from Pennsylvania and a few Baptists from Long Island. In search of fertile farmland, they settled in family and small community groups and were self-governed on the New England model until the area was organized by the state in 1798 as part of Oneida County (Gould, comp. 1955:13; Powell 1976:145).

The presence of mills occurred repeatedly in the early histories of small towns and villages in the area. Sawmills were found on Pleasant Creek in LeRaysville by 1802, and on Black Creek, one and a half miles above the future site of Sterlingville, by 1807 (DeLaire 1977:n.p.). An early, but undated, survey of Champion shows Gardners' Mills and Great Bend Bridge on the Black River (Map of Black River Tract, Township 4, Jefferson County, n.d., New York State Department of Tax and Finance).

By 1810, Jefferson and Lewis Counties had been created out of Oneida. As of 1820, there were 54 gristmills in Jefferson County, of which one was in Antwerp, five were in Champion, seven were in LeRay, one was in Philadelphia, five were in Watertown, and two were in Wilna. The number of sawmills (107) in the county exceeded the number of gristmills, and were also usually more frequent in towns and villages: four in Antwerp, three in Champion, 12 in LeRay, three in Philadelphia, seven in Watertown, and four in Wilna. A similar ratio is indicated in Lewis County, which reported 16 gristmills in 1820 and 46 sawmills (Burr 1829).

Road building also attended the development of rural industries and villages in the region. By 1806 there were 13 roads surveyed in LeRaysville, and by 1808, a road connected LeRaysville with Evans Mill. Within five years, the St. Lawrence Turnpike was

constructed through Wilna (Klein et al. 1985:2-20). The road forked; the Ogdensburg Turnpike went through Antwerp, and the St. Lawrence continued through Lewisburg and Diana Township (Map entitled "Parts of Jefferson and Lewis Counties," n.d. [ca. 1800-1810?], New York State Department of Tax and Finance, No. 241).

Another catalyst of village formation, although on a more limited scale, was the emergence of a local iron industry in the early 19th century. Iron processing in New York State as a whole dates to 1740, when Philip Livingston and his partners established a plant that included both a blast furnace and a refinery forge on Ancram Creek in Columbia County, about 14 miles east of the Hudson River (Swank 1884:101). Iron ore was discovered in Orange County, west of the Hudson, in the middle of the 18th century, and many furnaces and forges were built nearby. The first and most famous of these were the Sterling works owned by Peter Townsend, where the famous iron chain that spanned the Hudson and West Point during the Revolution was manufactured (Lewis 1976:18; Swank 1884:103, 104). Numerous ironworks were established in the counties adjacent to the Hudson, south of Albany, prior to 1800, an area which became the seat of the state's iron and steel industry in the 19th century. After 1800, ore beds in the vicinity of Lake Champlain were discovered and exploited (Swank 1884:107; Seely 1978).

According to the American Iron and Steel Association, New York State by 1876 contained four types of iron-making plants: charcoal-fueled blast furnaces, anthracite-fueled furnaces, rolling mills, and Catalan forges or bloomaries. Generally, anthracite furnaces and rolling mills were found along the Hudson River or the Erie Canal and its feeders. Catalan forges tended to cluster in the Adirondacks, west of Lake Champlain. The relatively few charcoal-fueled blast furnaces were found in the area of what is now the Fort Drum Reservation, or in the lower Hudson region where the industry had originated in the state.

During the early decades of the 19th century, a number of entrepreneurial individuals sought to exploit the natural resources (waterpower, iron ore, limestone, and wood) for production of iron (see Allen 1979). The most successful of these individuals was James Sterling, who by the middle of the century held controlling interests in ironworks at three locations, Sterlingberg, Sterlingville, and Lewisburg (Sterlingbush). All the ironworks established within the area of Fort Drum were charcoal fueled, and, with possible limited exceptions, cold-blast operations. None proved consistently productive or successful, and all had closed by the 1880s (Friedlander et al. 1988:20). Within their short period of existence and usually intermittent intervals of operation,

ALPINA IRON FURNACE

HAER No. NY-188

(Page 8)

however, the furnaces of the area's iron industry provided a variety of employment opportunities for local inhabitants, and formed the nuclei for several industrial villages. Four sites (James Sterling's three villages, plus the furnace and sawmill site of Alpina) remain within and adjacent to Fort Drum as a legacy of iron making in the region.

ALPINA FURNACE AND SAWMILL

Alpina furnace is one of two charcoal iron furnaces still standing within the Fort Drum Reservation. It was constructed in the late 1840s and operated intermittently until the early 1870s.

The deeds including Alpina have been traced to 1846, when Lot 886, on which this property is situated, was purchased by a group of Swiss and French investors in the name of one of their number, Charles Farvarger. By 1848, "buildings...with divers machinery and appurtenances and other structures for a furnace for the manufacture of iron" had been erected at Alpina under Farvarger, who acted as the company's "Agent Resident" (Lewis County Deeds [hereinafter LCD] 1:489; 4:45). However, the Swiss venture proved unsuccessful, as the local supply of bog ore proved "insufficient," and ore had to be brought in at some expense from St. Lawrence County mines. After running two hot blasts, producing two to five tons per day, the operation was suspended (Hough 1860:100). In 1850, the property came into the ownership of Frederick de Freudenreich, one of the original group of investors, who leased it to James Sterling to operate (LCD 4:389; 7:37).

In 1853, however, Freudenreich sold the tract to Zebulon H. Benton and Stephen Crocker (LCD 10:550). Benton was a quixotic figure who achieved local notoriety through his marriage to Caroline Savage, natural daughter of Joseph Bonaparte; Caroline was a wealthy woman whose money Benton employed liberally in pursuit of a variety of unsuccessful ventures. To raise capital, Benton organized the St. Regis Mining Co., with \$1 million capital in shares of \$10 each (Hough 1860:100). Although this venture, like most of Benton's activities, failed, attempts were made to keep the furnace in production. The 1855 state industrial census describes the operation of Benton's Alpine Iron and Mining Co. as having an \$83,000 capital investment in real estate, plus \$4000 in tools and machinery. Using 1,600 tons of iron ore and 21,000 bushels of charcoal, the furnace was listed with an annual production of 314 tons of pig iron through the efforts of 60 men paid \$26 per month for their labor. This

ALPINA IRON FURNACE

HAER No. NY-188

(Page 9)

census also recorded the presence of a sawmill at Alpina, also waterpowered, which produced boards from pine and road planks from hemlock, employing two men at \$20 per month.

According to Nielsen (1867), Alpina furnace was in production from 1854 to 1856, producing an estimated 672 tons of iron the first year, 1,364 tons the second year, and 1,092 tons the third year. A short blast produced an additional 400 tons in 1859. The furnace could be operated with either hot or cold blast, and motive power was provided by a breast wheel. The sources of ore included magnetite from the "Jayville bed," 7 miles northeast of Alpina, and red oxide from the "Kearney bed," 15 miles to the northwest. Ackerman (1971:5) notes that due to the poor state of local roads, the ore had to be brought in on ox-drawn sledges during the winter.

No other specific production information has been located about Alpina furnace. According to Ackerman (1971:5), four blasts were made in 1860, and two between 1860 and 1870. The 1865 industrial census noted that the furnace had not been in operation "for three years," so the two blasts of the 1860s may have occurred early in that decade.

The sawmill, however, appears to have been a somewhat more successful venture, listed in the 1865 state industrial census as having an annual production of 100,000 feet of pine board. In 1872 it was described by Child (1872:92) as measuring 60 x 72 feet, with additions of 180 x 60 and 90 x 60, having a single circular saw but "soon" to have a gang saw as well. A shingle and lath mill was also associated with this enterprise.

In 1873 Caroline Benton leased the ironworks to Lott Frost, father-in-law of Watertown banker Lovelock Paddock (LCD 45:376). The first year's rent, \$4,000, was to be paid not to the Bentons but to Paddock, "to the extent of any indebtedness of Z.H. Benton." According to the lease, the enterprise then consisted of the blast furnace "with all its tools, including coal wagon, carts etc., two coal houses, blacksmith shop with its tools, the store and two small dwelling houses, the farm dwelling house...with its garden." Frost was given the right to convert the store into a boarding house. In lieu of the farm dwelling, the Bentons agreed to build two "small story and a half dwelling houses, near the Furnace" which would be suitable for tenants. The Bentons also agreed to "complete the barn now building" and to furnish "coal house capacity sufficient to store 75,000 bushels char-coal" (LCD 45:376). Under Lott Frost's management, two short blasts were made (Priest 1938:38). Paddock, however, went bankrupt the following year, and although Benton retained ownership, there is no evidence that he was ever able to produce more iron from Alpina.

The legal status of the property is uncertain until 1896, three years after Benton's death, when it was sold at a Sheriff's sale to William Roberts of Lowville (LCD 92:478). He operated a sawmill at Alpina, employing 20 men whom he paid 65 cents each for a 12-hour day (Bowen 1970:156). The operation may have been subsequently known as the Indian River Chair Co., as it was bondholders of that company who conveyed the property to Elbert Stevens, Big S. Stevens, and Orman H. Braman in 1917 (LCD 129:184). The sawmill was reported standing, although "somewhat dilapidated" and no longer occupied, in 1922 (Priest 1938:13). In 1942, a tract of over 7,600 acres, which included Alpina, was sold by the then-owner, St. Lawrence University, to the United States for incorporation into the Fort Drum Military Reservation (LCD 191:498).

BIBLIOGRAPHY AND REFERENCES CITED

- Ackerman, David H.
1971 "Early Iron and Railroad Ventures: The Story of Alpina and the Black River & St. Lawrence Railway." Jefferson County Historical Society Bulletin 12, No. 2, pp. 3-11.
- Allen, Richard Saunders
1980 The Furnaces of Fort Drum. Manuscript provided by the Public Affairs Office, Fort Drum, New York.
- American Iron and Steel Association [AISA]
1874 The Ironworks of the United States. Philadelphia.
1876 The Ironworks of the United States. Philadelphia.
1878 Directory to the Iron and Steel Works of the United States. Philadelphia.
1880 Directory to the Iron and Steel Works of the United States. Philadelphia.
1882 Directory of Iron and Steel Works of the United States. Philadelphia.
- Bowen, G. Byron
1970 History of Lewis County, New York, 1880-1965. The Willard Press.
- Burr, David H.
1829 An Atlas of the State of New York. David H. Burr, New York. On file at the New York Public Library, New York.
- Child, Hamilton
1872 Gazetteer and Business Directory of Lewis County, New York for 1872-73. The Journal Office, Syracuse, New York.
- DeLaire, Karen
1977 Potential Significant Historical Sites within the Installation of Fort Drum. Manuscript on File at Fort Drum, Office of Environmental/Energy Division.

- Friedlander, Amy, Charles H. LeeDecker, and Robert Foss
1986 Re-Evaluation of Rural Historic Contexts for the Fort Drum, New York, Vicinity. Fort Drum Cultural Resources Project, Report No. 2. Prepared for the U.S. National Park Service, Mid-Atlantic Region, Philadelphia, by the Cultural Resource Group, Louis Berger & Associates, Inc; funded by the 10th Mountain Division, Fort Drum, New York.
- Friedlander, Amy, and Alain Outlaw
1988 A Report on the Rural Village and Iron Industry Historic Contexts, Fort Drum, New York Vicinity. Fort Drum Cultural Resources Project, Task Order 15. Prepared for the U.S. National Park Service, Mid-Atlantic Region, Philadelphia, by the Cultural Resource Group, Louis Berger & Associates, Inc.; funded by the 10th Mountain Division, Fort Drum, New York.
- Gould, Ernest C. (comp.)
1955 Jefferson County Sesqui-Centennial Program and Historical Almanac, 1805-1955. Watertown, New York.
- Hough, Franklin B.
1860 History of Lewis County, New York. Munsell & Rowland, Albany.
- Klein, Joel I., Cara Wise, Margaret Shaeffer, and Sydne B. Marshall
1985 An Archaeological Overview and Management Plan for Fort Drum. Prepared for the National Park Service, Mid-Atlantic Region, by Envirosphere Company, New York.
- Lesley, James P.
1859 The Iron Manufacturers Guide to the Furnaces Forges and Rolling Mills of the United States. John Wiley, New York.
- Lewis County, New York
1846-1942 Deed Records. On File at Lewis County Courthouse, Antwerp, New York.
- Ligowsky, A.
1857 A Topographical Map of Lewis County, New York. S. and R. S. Taintor, Jr., & Co., Philadelphia.
- Neilson, William G. (comp.)
1867 The Charcoal Blast Furnaces, Rolling Mills, Forges and Steel Works of New York in 1867. American Iron and Steel Association, Philadelphia.

Powell, Thomas F.

1976 Penets Square: Episodes in Early History of Northern New York. Northcountry Books, Lakemont, New York. On file at the New York Historical Society, New York.

Priest, Irvin M.

1938 The Why, of Lake Bonaparte and Natural Bridge, New York. Pamphlet on file at Jefferson County Historical Society, Watertown, New York.

Seely, Bruce

1978 Adirondack Iron and Steel Company: "New" Furnace, 1849-1854. Historic American Engineering Record NY-123. Report on file at New York State Museum, Albany.

Swank, James M.

1884 History of the Manufacture of Iron in All Ages and Particularly in the United States from Colonial Times to 1885. By the Author, Philadelphia.

Weitzman, David

1980 Traces of the Past: A Field Guide to Industrial Archaeology. Charles Scribner's Sons, New York.